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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,752	06/12/2001	Matthew L. Marrocco III	45345/WPC/M237	5110

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EXAMINER	4)
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THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 06/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/879,752

Applicant(s)

MARROCCO ET AL.

Examiner

Camie S Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2003.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-9, 13-61, 66-76 and 139-150 is/are pending in the application.
- 4a) Of the above claim(s) 5, 10-12, 62-65 and 77-138 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-9, 17-18, 21-24, 26, 29-40, 42-55, 57-61, 66-75 and 141 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 13-16, 25-29, 31, 34-39, 56, 60, 61, 76, 139, 140 and 142-150 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

1. Applicant's amendment and accompanying remarks filed March 28, 2003 have been acknowledged.
2. Examiner acknowledges amended claims 1, 9, 18, 67 and 141.
3. Examiner also acknowledges cancelled claims 5, 10-12, 62-65 and 77-138.
4. The objection to the priority of the application has been withdrawn due to applicant's argument.
5. The objection to the Information Disclosure Statement is withdrawn due to the receipt of the additional references sent in by applicant.
6. The objection of claims 9, 40 67 and 109 are withdrawn due to applicant's amended claims.
7. The rejection of claims 26 and 141 under 35 U.S.C 112, second paragraph is withdrawn due to applicant's amended claims.

### ***Specification***

8. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

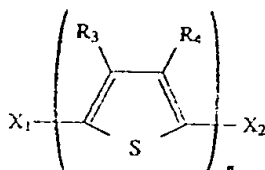
***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3, 7-9, 17-18, 21-24, 30, 32, 33-34, 42-55, 57-59 and 66-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al., U.S. Patent Number 5,540,999 in view of Aziz et al., U.S. Patent Number 6,392,250.

Yamamoto discloses an electroluminescent element comprising at least one layer comprising a thiophene polymer or copolymer comprising the structural unit as listed below



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as per instant claims 1, 3, 9, 18 and 40 (see Figure 1 and column 3, line 64-column 4, line 54).

The Yamamoto reference discloses that the copolymer can be random, alternate or block copolymers as per instant claims 30 and 32-33 (see column 8, lines 30-40). In addition, the Yamamoto reference discloses that the electroluminescent element comprises a glass substrate having an indium tin oxide anode, one or more charge transport materials comprising tris(8-quinolinolato)aluminum and N,N'-bis(m-methylphenyl)-N,N''-diphenyl-1,1'-biphenyl 4,4'-diamine, an electroluminescent layer comprising a polythiophene copolymer and a second electrode (cathode) as per instant claims 42-49 and 66-74 (see Figure 1; column 6, lines 31-61; Table 4 and Examples 1-13). Although the Yamamoto reference discloses using other luminescent materials such as metal complexes in column 11, line 60-column 12, line 7, the reference does not disclose luminescent metal ions or luminescent metal ion complexes in the polymer composition as per instant claims 1-2, 7-8 and 17. Aziz teaches an organic light-emitting device comprising polymers with a lanthanide metal chelate dopant such as tris(acetylacetonato)(phenanthroline) terbium or tris(2-phenylpyridine) iridium (see column 7, lines 56-60 and column 11, line 52-column 12, line 3). It would have been obvious to one of ordinary skill in the art to use a lanthanide metal chelate complex or luminescent metal ions/complexes as the dopant in the Yamamoto reference in order to provide various emission colors and increased electroluminescence efficiency from the organic light-emitting device as shown by Aziz in column 3, lines 11-50. Yamamoto does not disclose that the hole-transport material and the electron transport material are graded in the electroluminescent layer as per instant claims 50-51 and 75. Aziz teaches that the organic light-emitting device includes a mixed region (graded) composed of a mixture of a hole-transport material, an electron transport

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material and at least one dopant material (see abstract and column 2, line 65-column 3, line 10.

It would have been obvious to one of ordinary skill in the art to have a graded electroluminescent layer of Yamamoto in order to have enhanced efficiencies and operational lifetimes of the light-emitting device as shown by Aziz in column 3, lines 4-10. Additionally, the Yamamoto reference does not disclose the turn-on voltage of the electroluminescent element as per instant claims 57-59. Aziz teaches that the preferred operating voltages of the electroluminescent device are from 3 to 20 volts. It would have been obvious to one of ordinary skill in the art to have turn-on voltages of less than 15 V in order to provided extended operational lifetimes as shown by Aziz in column 7, lines 20-31.

The emission bands of the polythiophene copolymer composition and the device comprising the composition will be 20 nm or less as this is a structural property of the polythiophene copolymer composition as per instant claims 21-24 and 52-55. Therefore, this feature is inherent.

11. Claims 4,6, 13-16, 19 -20, 25-29, 31, 35-39, 56, 60-61, 76, 139-150 are objected to as drawn to the elected specie only. The specie referred to in the aforementioned claims is considered allowable subject matter. However, other species referred to in the aforementioned claims have not yet been searched.

### ***Response to Arguments***

12. Applicant's arguments filed March 28, 2003 have been fully considered but they are not persuasive. Applicant argues the objection to the specification. The abstract of disclosure contains the sentence, "Methods for producing such compositions, and the electroluminescent

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devices formed therefrom, are disclosed.” The term “disclosed” should be avoided in the abstract of disclosure. Applicant argues that the Aziz reference does not cure the deficiencies of the Yamamoto reference in that the polythiophene is used as the anode. The Yamamoto reference discloses in column 11, lines 60-68 that other luminescent materials can be used such as metal complexes. The Aziz reference is an organic light emitting device that includes a mixed region wherein the mixed region comprises polymers and at least one dopant wherein the dopant is a metal complex such as tris(acetylacetonato)(phenanthroline)terbium. Both references are drawn to organic light emitting devices and thus are analogous art. The use of a metal complex dopant allows the device to emit various colors in a desired wavelength range. Additionally, the Aziz reference discloses in column 6, lines 28-35 that the use of a dopant improves device performance, efficiency and stability. Therefore, the combination is not without motivation.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (703) 305-4488. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly, can be reached at (703) 308-0449. The fax phone numbers for the Group are (703) 872-9310 {before finals} and (703) 872-9311 {after finals}.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

A handwritten signature in black ink, appearing to read "Cynthia H. Kelly", is written over the typed name and title.